

**PROLONGED DRY SPELLS AND FOOD SECURITY AMONG HOUSEHOLDS IN
ENDINZI SUB COUNTY ISINGIRO DISTRICT, UGANDA**

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**A DISSERTATION SUBMITTED TO THE FACULTY OF BUSINESS, ECONOMICS
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DECLARATION

I, George William Byanyima, hereby declare that this research titled, **‘Prolonged dry spells and food security among households in Endinzi sub county Isingiro district, Uganda’** is my own original work and it has never been submitted to any other institution of higher learning for any award.

Signed: 

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APPROVAL

This research report has been submitted to the Faculty of Business Economics and Governance with the approval of my University Supervisors.

Signed.....



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26/09/2025

DEDICATION

I dedicate this work to my family for their prayers and support rendered to me during this research and my entire academic journey.

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ABSTRACT

The study was about the effect of prolonged dry spells on food security among households in Endinzi sub county Isingiro district. The study objectives were; (1) To identify the effect of prolonged dry spells on food availability among households in Endinzi sub county Isingiro district, (2) To identify the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district (3) To assess the effect of prolonged dry spells on food consumption among households in Endinzi sub county Isingiro district. The study was anchored on the Anthropogenic Global Warming theory by Joseph L. Bast (2010). The study adopted a cross-sectional design where quantitative research methods was utilized. The study involved 350 households which were selected from seven villages in Endinzi sub county using simple random sampling techniques. Data was collected using a Likert scale questionnaire and the data there of was analysed using SPSS. The main findings revealed that there were food availability inconsistencies among the households, prolonged dry spells resulted into poor yields at the end of the harvesting period which generates limited food access among the households and that dry spells negatively impacted on households' ability to maintain a balanced diet. The study concluded that dry spells heavily influenced food security in Endinzi Subcounty. It was therefore recommended that interventions that promote climate-smart agriculture as a strategy to improve resilience against dry spells be encouraged.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, scope of the study; significance of the study and the conceptual framework.

Prolonged dry spells are characterized by extended periods of insufficient rainfall, which have a direct impact on crop yield and livestock production. In Endinzi Sub County, where many households depend on rain-fed agriculture, these dry spells can lead to crop failures, reduced food supply, and increased food prices. This phenomenon not only affects the quantity of food grown but also undermines nutritional quality, exacerbates economic disparities, and challenges the coping mechanisms of vulnerable populations.

The relationship between prolonged dry spells and food security among households in Endinzi is multifaceted. On the one hand, insufficient rainfall directly affects agricultural output, making it challenging for households to achieve self-sufficiency in food production. On the other hand, the economic implications of agricultural failure can precipitate a cycle of food insecurity, forcing households to rely more heavily on market purchases a situation that can lead to further strain if local markets experience shortages or inflated prices due to the dry spells.

1.1 Background to the Study

This background is structured in accordance with Amin (2005) guidelines of proposal and dissertation writing and development. It entails historical background, theoretical, conceptual and contextual background of the study.

1.1.1 Historical Background

Across the globe, prolonged dry spells is traced far back from 1850 where the earth temperature risen by average of 0.6⁰C and since 1982 there has been rapid increase in variations

of temperature and in 1960s the world recorded steep increase in temperature of 1.3⁰C never the less it has continued to rise and it is projected to be at 2.5⁰C in 2050 causing a strong damage on food security around the world where Asian countries such as Iran , Afghanistan experienced the most extreme dry spells in 1985 leading to death of thousands of people due to famine . (UNDP, 2012).

In sub-Saharan Africa, the north Africa and the horn of Africa experienced severe dry spells where experienced in 1984 which extended to 1986 where countries of Somalia, Ethiopia, Egypt, and Sudan causing migration of 450000 people and thousands of livestock due to loss of vegetation which resulted to no food for human and livestock (Vincente et al 2012). In east Africa since 1985 there has been re current severe dry spells with the rising temperatures of 0.3⁰c which has led to reduced agriculture production. In western Kenya neighboring Somalia there has been extended dry spells and the most extreme started begun in 2014 and extended to 2016 where millions of people were displaced to Uganda and death of thousands of livestock due disrupted growing seasons which caused famine (FAO, 2015).

Uganda witnessed a strong disaster of prolonged dry spells in 1999 which resulted into disrupted growing season of food crops leading to wide spread of famine across the country (FAO REPRT 2015). In Isingiro district the effect of prolonged dry spells was observed in 2016 which extended to 2017 which caused destruction of the agriculture produce by drying up of food crop gardens, which resulted into food insecurity and death of animals forcing people to migrate from the district to the different parts of the country .Since then Endinzi sub county has experienced the challenge of food insecurity through decreased precipitation, decreased rain variability, late or delayed seasonal rain falls, un predictable hail storms and increase in general temperatures

1.1.2 Theoretical Perspective

This research is under pinned by Anthropogenic Global Warming theory which was advanced by Joseph L. Bast in 2010. The theory explains that excessive carbon especially too much carbon resulting much sunshine and high temperature variations in Endinzi sub county. The theory provides the relationship between the variables where prolonged dry spells are attributed to a growing urban of Isingiro town causing air pollution, the Ruhenda charcoal burning activities and the general deforestation of trees ,vegetation in the Endinzi sub county to establish farming lands and extensive cattle grazing leading low humidity in the atmosphere and the rise of temperatures in the area (seven theories page 7) .This has led endinzi sub county to receive little or no rainfall resulting to long and extended dry spells and disrupted growing seasons hence food insecurity in the area.

1.1.3 Conceptual Background

The study constitutes three variables that is prolonged dry spells (IV) with its components of high temperatures and long dry spells, high evaporation rates Which influences (DV) in result of food availability, food consumption and access to food by the people of Endinzi sub county. However, there are intervening variable with its components of government policies, market dynamics, coping strategies which prescribes the relationship between the variables the independent variable is experience in catastrophes of prolonged dry spells which has led disrupted growing season, shifting of animals to Tanzania and this has greatly affected the access of food, availability of food and utilization of food among the homesteads in Endinzi sub county (district Malt hazard and vulnerability report 2024). According to this study Prolonged dry spells typically refers to dry spells conditions lasting months to years, characterized by a series of dry months or seasons that result in a cumulative deficit in water supply. Severity can be quantified using various indices, such as the Standardized Precipitation Index by Wilhite (2000).

In relation to the study food security refers to a situation where people can access food, presence of enough of food and utilization of food items by the population living in a given area or a specific location which can meet the diet needs to promote healthy lives (FAO 2017). Adequate food items promote a healthy population and enhance economic development in the home steads because people are able to work and alleviate poverty.

1.1.4 Contextual Background

Prolonged dry spells have led to damage on the agriculture sector resulting into scorched banana plantations, scorched farm grasses and scorched gardens which has made it had for the people of Endinzi sub county to access, utilize food and availability of food in the area. (Nalule 2017). Over 98% of the people in Endinzi sub county depend oof agriculture with 90% people depend on banana plantations 5% people on cattle grazing and 3% people grow sweet potatoes, Irish potatoes and others according to Nile post wed 2024. In the same report shows prolonged dry spells have led to reduction in agriculture produce to 51% of bananas produced from 90% and shifting of livestock to Tanzania (Isingiro district commercial officer report 2024) This has created a challenge of food security in the parishes of Busheka, Rwambaga, Kashonga and Buhunga resulting from dry spell. The above parishes even they have not yet planted any single seed compared to other parishes. The resident district commissioner expressed her concern on the people of those parishes to have a food relief because of extend dry spells causing the disrupted food crop growing season (Nile post wed 2024). This could result into catastrophic hunger in the area and can lead to poor health due to poor access to food, inadequate food items and utilization of food in terms of the number of meals supposed to receive by a home stead.

1.2 Statement of the Problem

The challenge of food security in Endinzi sub county has led most families to take one meal a day due to the inadequate food, and limited access to food items forcing people to migrate to

other areas which receive little amount of rainfall such as Tanzania, (Rwangire and Murisa 2021). This has resulted into poor feeding practices and economic hardships among households which has affected the health of people. (Nuwagaba et al 2013). In Endinzi sub county the issue of low access to food, inadequate food items and utilization of food in terms of the number of meals the household supposed to have, have greatly reduced which has accelerated malnutrition in young babies, (Isingiro district commercial officer report 2024)). Since agriculture is the main source of food, over 40% of the families consume a single meal a day due to prolonged dry spells spell causing disruption of crop growing seasons hence resulting to shortage of food (Rwangire and muriisa 2021).

However, the government of Ugandan has patterned with the non-governmental organizations to implement different prolonged dry spells adaptability strategies to increase food security among the households which include modified resource management, introduction of new varieties of crops and changes in husbandry techniques that may sustain crops and agriculturally based industries, (Srindraharan et al 2019). Despite the above mechanisms the study, Endinzi sub county experiences perennial food insecurities (Twongyirwe et al 2017). Therefore, the study set out examine the effect of prolonged dry spells on food security among households in Endinzi sub county Isingiro district.

1.3 Overall Objective

To determine the effect of prolonged dry spells on food security among households in Endinzi sub county Isingiro district.

1.3.1 Specific Objectives

1. To identify the effect of prolonged dry spells on food availability among households in Endinzi sub county Isingiro district.

2. To identify the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district
3. To assess the effect of prolonged dry spells on food consumption patterns among households in Endinzi sub county Isingiro district.

1.4 Research Questions

1. What is the effect of prolonged dry spells on food availability among households in Endinzi sub county Isingiro district?
2. What is the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district?
3. What is the effect of prolonged dry spells on food consumption patterns among households in Endinzi sub county Isingiro district?

1.5 Scope of the study

1.5.1 Geographical scope to the study

Endinzi sub county is located in Bukanga constituency Isingiro district local government in Uganda. It is constituted of 4 parishes; of Busheka, Rwambaga, Kashoga and Buhunga. It has a total of 19 villages. Endinzi sub county borders Endinzi town council in north west, Mbare together with Rwanjojera in the west, Rakai in north east, Tanzania in the south having a family size of 4.3 people. Endinzi sub county is the one of most affected area where 80% of its population depend on agriculture as their major source of livelihood such as banana plantation and livestock products, dry spells effects have had far reaching consequences causing food insecurity in the area. (UBOS 2024). Isingiro district has always been affected by extended dry spells following the past events such in 1994, 2006, 2017 where the women in the homesteads were cooking blankets compared to the neighboring districts such as Mbarara and Rakai which do not have extended dry spells (Magala and Owiny 2020).

1.5.2 Content Scope

The study was limited to research objectives, which included; to identify the effect of prolonged dry spells on food availability among households in Endinzi sub county Isingiro district. to identify the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district to assess the effect of prolonged on food consumption patterns among households in Endinzi sub county Isingiro district. These objectives had to measure the effect of prolonged dry spells using the constructs of food security in Endinzi sub county Isingiro district.

1.5.3 Time Scope

The research was focused on the period of five years that is to say from 2020 to 2024. This period was preferred because Isingiro district reported on a number of occasions effects of prolonged dry spells of crop husbandly, animal husbandly and how this affected food security within the district. These also provided a comprehensive understanding of trends of food security in relation to prolonged dry spells among households in Endinzi sub county Isingiro district.

1.6 Justification of the Study

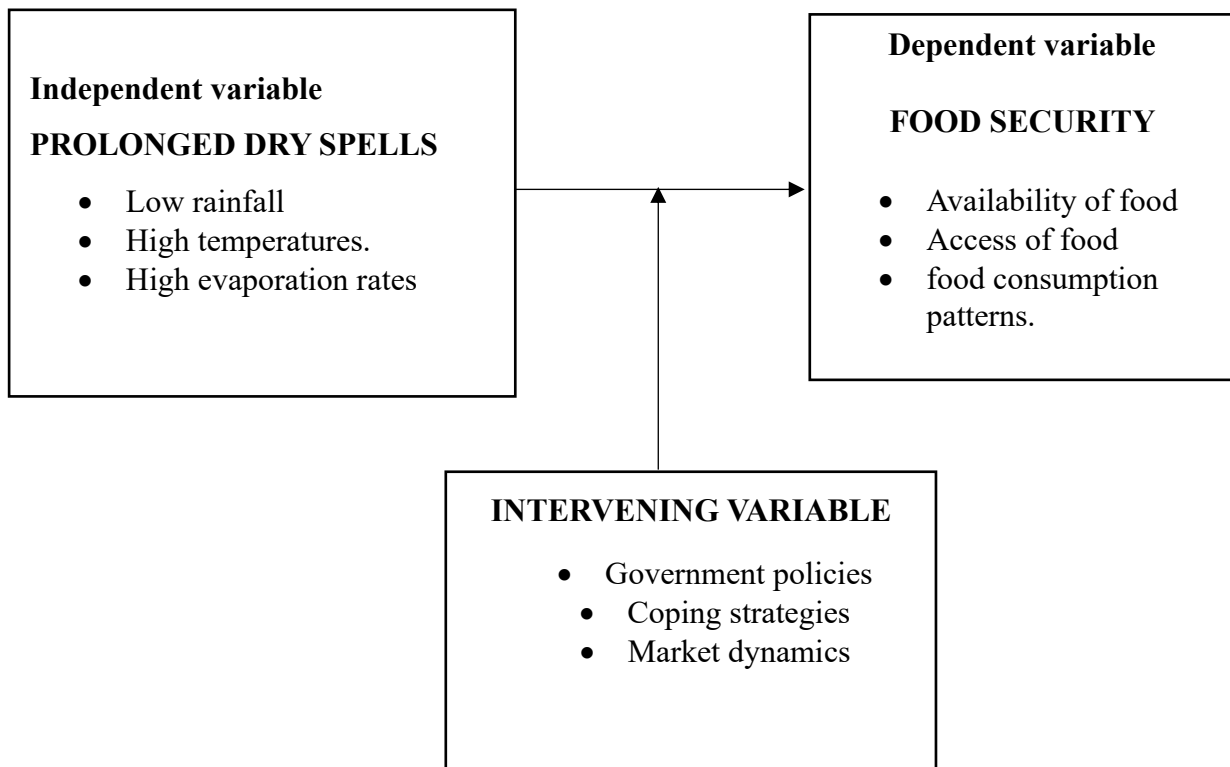
The research addressed pertinent challenge of access of food among the families in Endinzi Isingiro Uganda. This had led most families to take one meal a day due to the inadequate food, and limited access to food items forcing people to migrate to other areas which received little amount of rainfall such as Tanzania, (Nile post wed 2024). This had come up poor feeding practices and economic hardships in the households which affected the health of people. The prolonged dry spells led to destruction of agricultural sector evidenced by scorched banana plantations, scorched farm grasses and scorched gardens. It also led to the disrupted growing season due to the extended dry spells leading to low food harvests (Nalule 2017). According to WMO (2016), a dry spell is often termed "prolonged" when it extends over a substantial period,

typically several months to years, leading to significant impacts on water supply and agricultural productivity and Isingiro district is always vulnerable during period extended dry spells where the temperatures of the area increased leaving the whole place scorched hence damaging food production chain (Magala and Owiny 2020).

1.7 Significance to the Study

1. **Local Adaptation Strategies:** Understanding how prolonged dry spells affected food security at the local level would help in devising appropriate adaptation strategies to ensure food availability and access for the communities in Endinzi Sub County.
2. **Policy Implications:** Findings from such a study would inform policymakers at the local and national levels about the specific challenges faced by homesteads in the area, leading to targeted policies and interventions to address food security issues in the context of changing climates.
3. **Community Resilience:** By identifying the vulnerabilities and resilience of households to climate change impacts on food security, the study would facilitate the development of community resilience-building initiatives that would enhance long-term food security in the area.
4. **Sustainable Agriculture Practices:** Research outcomes would guide the promotion of sustainable agricultural practices that are resilient to climate change, thereby ensuring continuous food production and livelihood support for homesteads in Endinzi Sub County.
5. **Findings would be used to formulate policies by the government:** The study would contribute to the broader knowledge base with intersection of the challenge providing insights that can be valuable for similar regions facing similar challenges globally.

1.8 Conceptual Frame Work



The conceptual framework for this study explored the effect of prolonged dry spells which had constructs of low rainfall, high temperatures, high evaporation rates which resulted into food insecurity in Endinzi sub county Isingiro district. Food insecurity was measured on food access, food availability and food consumption patterns however there were intervening variables which created a relationship through government policies, coping strategies and market dynamics which increased food security among the households in Endinzi sub county Isingiro district.

Theoretical perspective and Conceptual Framework set the context for the research by explaining how human-induced climate change (through increased carbon emissions) can lead to prolonged dry spells. The conceptual framework takes this theory and applies it to specific local conditions, investigating how those prolonged dry spells affect food security. The theoretical framework establishes a cause-and-effect relationship increased which included carbon emissions led to climate change, resulting in prolonged dry spells. The conceptual

framework uses this theoretical underpinning to delve deeper into how these dry spells impact agricultural productivity and, subsequently, food security at the household level in Endinzi Sub- County.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section presents review of previous work and studies conducted by researchers which is limited to the research objectives on the same research issue.

2.1 The effect of prolonged dry spells on food availability among households

The relationship between dry spells and agricultural productivity is well-documented, with studies showing that dry spells impact not only crop yields but also livestock health and productivity (Wheeler & von Braun, 2013). In many rural households, subsistence farming is the primary source of food; thus, prolonged dry spells jeopardize the ability of families to grow sufficient food to meet their needs (Morton, 2007). Research by Zhang et al. (2018) found that dry spells conditions often lead to reduced farming activities, as farmers either delay sowing or abandon crops entirely due to insufficient moisture. The direct correlation between water availability and agricultural output emphasizes the profound implications of drought-induced crop failure on household food supplies.

The socio-economic dynamics of households significantly mediate the impacts of prolonged drought. Households with limited financial resources may not be able to cope effectively with crop failures. As noted by Hossain et al. (2019), economically disadvantaged families may resort to purchasing food from external markets when their harvest yields are low, which can lead to malnutrition when prices surge due to decreased food availability. The affordability and accessibility of food become significant concerns during dry spells, as food prices are driven by supply shortages, further entrenching food insecurity among economically marginalized populations (Mastrorillo et al., 2016).

The repercussions of prolonged dry spells extend beyond immediate food scarcity; they also affect the nutritional quality of food available to households. Anderson and Scheraga (2019) indicate that during periods of drought, farmers may prioritize staple crops that require less water over more nutritious crops, leading to a decrease in dietary diversity. A study by Ritchie and Roser (2020) highlights the importance of diverse diets for household nutritional health, underscoring that reliance on a limited range of food can exacerbate the incidence of both undernutrition and micronutrient deficiencies in vulnerable populations. Consequently, prolonged dry spells not only diminish food quantity but can also compromise the quality of food, posing further risks to health and well-being.

Prolonged dry spells have continued to harm the supply of food on the planet earth where 690 million living in hunger due to the limited supply of food and in Africa it constitutes 21% of African population who live in hunger. The increase in temperatures due to dry spells disrupt the availability of food among the households which puts a risk where people are likely to experience severe hunger by 2050. Dry spells have become a serious threat to availability of food because it causes disrupted growing seasons and scorching of the planted crops in agricultural farm yards and the hail storms causes destructions of farm lands due to heavy winds, causing landslides thus leading to a challenge of food availability among the households. (Genworth, 2023). The study was carried in Uganda and arguments are true but the study is criticized for utilizing secondary data of 2010 neglecting primary data there by leaving the gap for the researcher to conduct this study which will use mixed methods researcher which utilizes primary data making the research more descriptive.

Prolonged dry spells have increasingly been recognized as a significant factor affecting food availability at the household level. Recent studies highlight that extended periods of dry spells lead to substantial reductions in agricultural productivity, which directly translates into

decreased food supplies for affected households. For instance, a 2024 study by Robinson et al. illustrates that regions experiencing prolonged dry spells conditions saw a 30% decline in staple crop yields, exacerbating food insecurity among vulnerable populations. This decline is particularly pronounced in areas heavily dependent on rainfall for irrigation, where traditional farming practices are inadequate to cope with the changing climate (Chen et al., 2024). The pressure on local food systems is further compounded by market fluctuations, as decreased supply leads to increased prices, making it challenging for households to access affordable food.

The impacts of prolonged dry spells have led to poor availability of food among homesteads where by the 1999/ 2000 dry spells lowered the water table and led the drying of the soil. This severely led to the disruption in food supply to the homesteads facilitating hunger in the homesteads. The lowering of water table leads to the drying up of banana plantations, beans, cassava throughout western Uganda which lead to the challenge of food availability. The extended dry spells effect of climate change led to the disrupted food crop growing season due to the dry soils which were un able to support plant growth. (joseph Mukasa et al 2020). The study was conducted in Kassali in Uganda and the results are true but it is criticized for utilization of quantitative data and using questionnaire method on community people not considering the people are un u able to read and write there by leaving the gap which informs this study to utilize mixed methods research and interviewing of participants.

2.2 The effect of prolonged dry spells on food access among households

Dry spells have long been recognized as a critical environmental phenomenon that significantly affects agricultural productivity and food security. According to the Intergovernmental Panel on Climate Change (IPCC, 2019), prolonged dry spells can lead to severe water scarcity, affecting crop yields and livestock health. As agriculture is heavily reliant on adequate

precipitation, prolonged periods of dryness can diminish food production capacity, which directly impacts food access among households. Therefore, understanding the implications of prolonged dry spells on food access is essential for policymakers and community planners, particularly in vulnerable regions.

Prolonged dry spells disrupt not only local agricultural systems but also broader food distribution networks. As noted by Albrecht et al. (2018), reduced agricultural output limits the variety and quantity of food available in local markets, leading to increased food prices and reduced access among low-income households. Food access is closely tied to economic resources; thus, households already facing economic hardship during dry spells conditions often encounter a double burden: reduced food availability coupled with rising costs. As demonstrated by several studies (Mastrorillo et al., 2016; Brown & Rosenberg, 2018), this economic strain exacerbates food insecurity, resulting in further negative health outcomes, including malnutrition and increased incidence of diet-related diseases.

Gender dynamics play a crucial role in how dry spells impacts food access among households. Research by Garduño et al. (2020) highlights that women, who are often responsible for food procurement and household nutrition, face unique challenges during dry spells periods. Their roles can be severely constrained by limited access to resources, including land and credit, effectively widening the gender gap in food security. Access to food becomes increasingly inequitable, as women may be forced to depend on suboptimal food sources or community aid, which remains insufficient to meet the nutritional needs of their families (Seymour et al., 2017). This gendered perspective on food access underscores the need to consider socio-cultural factors when evaluating the effects of prolonged drought.

The psychological and social dimensions of prolonged dry spells cannot be overlooked. Studies indicate that prolonged dry spells can lead to increased stress and mental health issues, which

further diminish a household's capacity to manage food resources effectively (Mastrorillo et al., 2016). The strain of food insecurity resulting from dry spells can trigger a cycle of despair and hopelessness, affecting decision-making processes related to food sourcing and budgeting. Additionally, social cohesion and community support networks may fray under the pressure of prolonged scarcity, leading to increased competition for limited resources, which can further marginalize already vulnerable groups (Tschakert et al., 2013).

Increase in temperatures in developing countries such as Uganda has led to the reduction of agricultural production to decline by 3% leading to households failing to access food. Crop yields are projected to sharply reduce by 2050 due to the increased catastrophes of climate change. this has led to the narrowing and disputed crop growing seasons resulting to limited agricultural production which facilitates failure of the households to have accesses to food to eat. 90% of the agricultural production depends on rainfall and 10% of the agricultural production is mechanised through irrigation which is a small portion of produce. This proportion cannot feed the ever-growing population in the households leading the poor to be vulnerable and failing to access food because of being expensive. (Baptista 2022). The research was carried in Africa where climate change effects have been reflected through the study is criticized for utilization of secondary data sources hence facilitating a gap to be exploited by this study which will utilize primary sources of data collection.

The impact of prolonged dry spells on food access among households has garnered increasing attention in recent scholarly research. Dry spells conditions significantly affect agricultural productivity, which in turn shapes food availability and access. According to Smith and Jones (2024), extended periods of dry spells can lead to sharp declines in crop yields, which disproportionately affect rural households that rely heavily on agriculture for both subsistence and income. They argue that as crop production diminishes, food prices escalate, making basic

staples less affordable for low-income families. Moreover, the study highlights that the psychological stress associated with prolonged dry spells conditions can hinder households' decision-making capabilities, further exacerbating food insecurity (Smith & Jones, 2024).

In addition to economic implications, socio-cultural dynamics also play a critical role in shaping food access during prolonged dry spells periods. Research by Patel et al. (2024) emphasizes that dry spells can disrupt traditional food distribution networks within communities, compounding existing inequalities in food access. During times of drought, marginalized groups such as women and children often bear the brunt of food scarcity, leading to heightened vulnerability. The authors suggest that community resilience strategies, such as the establishment of cooperative food systems and localized supply chains, can mitigate some of the adverse effects of dry spells on food access. By fostering collaboration and resource-sharing among households, these strategies not only enhance food security but also promote social cohesion in the face of environmental challenges (Patel et al., 2024).

The effect of prolonged dry spells greatly affects soil nutrients through leaching and drying of the land creating a less fertile soils which can yield enough food for ever increasing population min the home steads. (FAO, 2020). This has resulted in limited production of food creating a severe hunger in the households over 25% of the global households fail to access food due to the high prices in the markets leading to malnourished children, stunted growth and poor health. A lot of migrations have been observed due to hunger forcing people to flee from their localities to other areas to access food. With out food human being life is hampered and can lead to death and in northern Uganda in 2017 in northern region due to extended dry spells people were seen dying failing to access food (Catherine, 2022). The research is criticized for utilizing quantitative research methods neglecting qualitative research method which aims at descriptive analysis and it is exploited by this study.

2.3 The effect of prolonged on Food consumption patterns among households

prolonged dry spells lead to reduced agricultural productivity, which in turn restricts the variety and quantity of food available for consumption at the household level. Brown and Funk (2008) demonstrated that communities affected by dry spells suffered not only from decreased yields but also from a decline in the diversity of crops planted, resulting in limited food options and poor dietary quality. This is especially evident in subsistence farming communities that rely heavily on local produce. The diminished availability of nutrient-rich foods directly affects the dietary intake of families, leading to greater reliance on staple grains that may not provide comprehensive nutritional benefits (Schmid Huber & Tubiello, 2007).

Prolonged dry spells affect the economic dynamics within households, further impacting food utilization. As agricultural outputs decline, families may be forced to sell off assets or withdraw children from school to contribute economically (Hoddinott & Hoddinott, 2006). Limited income reduces purchasing power, leading families to opt for lower-quality, less nutritious food options, thus exacerbating malnutrition. A notable example can be seen in regions of sub-Saharan Africa, where drought-related economic stress has been linked to increased rates of stunting and other malnutrition indicators among children (Save the Children, 2013).

According to a study by D'Odorico et al. (2013), households may resort to eating less diverse meals, reducing overall energy intake and leading to nutrient deficiencies. This highlights the importance of understanding both dietary quality and quantity in the face of resource scarcity. Communities may also rely on food aid, which may not meet cultural preferences or nutritional needs, further complicating effective food utilization (Mastrorillo et al., 2016). The disparity between what is available and what is nutritionally adequate emphasizes the need for tailored interventions in response to drought.

prolonged dry spells and food utilization is influenced by social and governmental responses to environmental stressors. Policies aimed at enhancing food security must take into account the dynamic nature of dry spells and its implications for nutritional outcomes. Recent literature underlines the necessity for adaptive management strategies that not only address the immediate food shortages caused by dry spells but also promote resilience and dietary quality in affected communities (Ziervogel et al., 2010). Overall, understanding the relationship between prolonged dry spells and food utilization is critical for developing sustainable approaches to improve nutrition and health in vulnerable populations.

Heavy sunshine and its impacts have been seen on malnutrition level in African children of about 22% have stunted growth has been due to the poor feeding practices in the home steads because of failing t access food. Most families have resorted to eat once a day including children which has created poor health (MOH report 2022). The disrupted food growing seasons and extended dry spells seasons scorches the agricultural farm lands leading to hunger in most homesteads. Heavy rain fall with hail storms damages all the farm land leaving home steads with little food which is utilized sparingly to last for a period of time with the hope of better situations. The malnourished young ones have weak immunity and they can die if the disease attack them. (Noora-Lisa Aberman and Cristina Tirado 2014). The study was conducted in Africa though it is criticized for utilizing quantitative research neglecting qualitative research which is descriptive in nature.

The adverse out comes of prolonged dry spells has left most households without food causing a threat of hunger. The longer and extended climate change effects composed of dry spells and hailstorms have destructed food systems causing the catastrophe of hunger in the households (ipcc 2014). The food safety in the households has proved to a challenge where most of the households have survived because of food reliefs by the world food program and other non-

governmental organizations. In Uganda the 2017 dry spells which hit Isingiro district left them with nothing to eat hence making food safety to be a challenge. The consequences of climate change continue to threaten the lives of people due to damage of agriculture sector and human life can be lost due to limited food supply and access (Kelechi 2022). The study was conducted in Nigeria in south Nigeria through it is criticized for utilization of focus group discussions which do not give the actual data because people tend not to expose certain facts which leaves the gap which will be exploited by this study.

Prolonged dry spells consequences have been also observed in the quality of food making human life to consume poor quality food due to the heavy dry spells which leads to massive heat on earth's surface and damage the root crops such as cassava, sweet potatoes and the heavy rains which causes to rotting of food in the gardens (IPCC, 2014). This has resulted into consumption of harmful food product and cannot be stored in granaries to be utilized for the future which leads to hunger among the homesteads (Sonjaj et al., 2012). The study was conducted in south though it is criticized for utilizing secondary data and quantitative research neglecting qualitative research which leaves a gap to be exploited by this study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section showed frame work of study and how data would be obtained from the data sources. It covered the research design the study population, the sample size and selection of sample, the sampling techniques and procedures, the data collection methods, the procedures of data collection, the data analysis, and the measurement of variable.

3.1 Research Design

A cross-sectional design was employed by the study where quantitative research methods was utilized. Cross sectional research was employed by the researcher since the researcher was to gather data in course of the study which is cost effective. A cross-sectional design offers a snapshot of the prevailing conditions at a single point in time. In the context of understanding the impact of prolonged dry spells on food security, this design allowed researchers to observe and quantify the current status of food security among households impacted by recent dry spells. Quantitative data was collected through use of questionnaire method and analyzed by SPSS ver. 23 and qualitative which was descriptive in nature (Braun & Clarke, 2020).

3.2 Study Population

Endinnzi sub county has a total of 1737 households according to (UBOS REPORT 2024) and information was obtained from 350 households which were selected from seven villages in Endinzi sub county. Due to the presence of urban centres among in some villages, there was difference in the number of households where by villages with urban centres had compact homesteads which was different from villages with no urban centres with scattered households. Data was be generated through the use and administration of questionnaires by the ticking the right response from the participants.

3.3 Sample Size

Saunders 2012 defines sample size as the population selected to represent the general population in the study area. Using Taro Yamane's formula sample size of 352 and the units of inquiry are the households selected from various locations in the study area selected; 70 households from Matara, 55 households from Ekinazi, 55 households' people from Ntura, 55 households from kagaga, 40 households from Rushenyi, 40 from Rwamagana, and 35 households Ekiyonza by use of simple random sampling technique. Taro Yamane's formula which determines 95% of the population to get a sample size of the households where data was collected from. Taro Yamane's formula which follows the following formula

$$n = N/1+N(e)^2$$

Where:

n: calculated sample size

N: Target population which were community members and 01 district agricultural officer 01 district commercial officer (587)

e: Margin of error (0.05)

$$\text{thus } n = 587/1+587(0.05)^2$$

352 was the sample size for the study

3.4 Sampling Procedure and Techniques

The study utilized simple random sampling, all the participants from seven villages were involved in the gathering of data for study in Endinzi sub county. With the aid of chairperson local council three and cooperating the civil servants at the Endinzi sub county to select the participants.

3.5 Data Collection Methods

3.5.1 Survey Questionnaire

Hamed Taherdoost (2022) defines a questionnaire survey as data collection method that allows gathering of quantitative data by way of setting questions and participants filling in answers. The researcher used this data collection method because it provides specific responses about the study and provided privacy to the participants. It was also cost effective and time saving.

3.6 Data Collection Instruments

Sugiyono (2012) defines instruments as tools used to gather data from the primary sources to the research study. Only relevant data collection tools were used in the research study.

3.6.1 Questionnaire

Wallace (2013) defines questionnaire as a research instrument consisting of a set of questions or prompts used to gather information from respondents. The researcher formulated questions in a five-point rating scale of strongly agree (Strongly Agree-5), agree (Agree- 4), (Not Sure- 3), disagree (Disagree-2) and strongly disagree (Strongly Disagree-1). Likert questionnaire was simple to use, cost effective and it measured the relationship between the variables accurately. Questions were pre tested to ascertain if they were specific to the variables to eliminate bias in research.

3.7 Data Quality Control

The researcher ensured the validity and reliability of the instruments and the data thereof through the following ways.

3.7.1 Validity

The questionnaire was pre tested on the voluntarily participants to ensure validity in the study. All the questions were reviewed by the university supervisor and at proposal presentation to ensure if the tools were relevant to the study and the those which were not applicable to the

study were deleted. From participants' rating, Content Validity Index (CVI) was computed using the following formula: $CVI = \frac{R}{(R+IR)}$. The tools were considered valid, if their CVI was 0.7 and above as recommended (Amin, 2005).

3.7.2 Reliability

According to Cresswell defines reliability as the consistency and stability of a score from an instrument. The researcher first pretested the instruments guided by the internal university supervisor to assess the consistence of the data collection tools. 10 community were required by the researcher to participate in testing reliability process and questionnaires were analyzed by SPSS version 23. The reliable values were subjected to Cronbach alpha values are 0.7($r = 0.7$) which shows consistence with in the data collected.

3.8 Procedures of Data Collection

The researcher was permitted officially when he got a permission document from the institution which was to give him permission to access the research participants in Endinzi sub county. The official permission was granted to the researcher by the RDC of Isingiro district who is the head of the security in the district.

3.8.1 Inclusion criteria.

The criteria for identifying responsible adults include factors was: Age: Individuals above a certain age threshold (e.g., 18 to 59 years and above). Also, adults who had basic understanding of the household's economic or agricultural activities, or those who had been living in the household for a sufficient amount of time.

3.9 Data Analysis

This entailed cleaning of the gathered information to enhance quality information to make a meaningful study. In this case the researcher entered data into a computer data software SPSS

for analysis and interpretation of findings. Descriptive statistics of frequencies, percentages, means and standard deviations were presented. To study the relationship between prolonged and security in Endinzi subcounty, a Pearson correlation test was used for the main study variables.

3.10 Measurement of Variables

All the variables under study were measured using a Likert scale that had five categories to respond to 1 = Strongly Disagree, 2 = Disagree, 3 =Not sure, 4 = Agree and 5 = Strongly Agree.

Table 1: Measurement of Variables

Scale	Mean Range	Response Mode	Interpretation
5	4.20-5.00	Strongly Agree	Very satisfactory
4	3.40-4.19	Agree	Satisfactory
3	2.60-3.39	Not Sure	Fairly satisfactory
2	1.80-2.59	Disagree	Unsatisfactory
1	1.00-1.79	Strongly disagree	Very unsatisfactory

3.11 Ethical Considerations

The researcher sought ethical approval from the Bishop Stuart University research Ethics Committee (REC-BSU) and approval was granted under number BSU-REC-2025-567. The BSU-REC critically assessed if the research ethical considerations were addressed. Before the actual data collection was made the researcher first sought informed consent from the participant or respondent to participate in the study. There was an option granted to the respondent that he or she would terminate the consent in the middle of participation if she he or she feels un comfortable. The respondent was allowed to ask questions voluntarily in the middle of the interaction to understand fully that was he or she answering. The researcher

ensured a high level of privacy whereby there was no room for uttering secrets which have been shared by the respondent.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

In this chapter, results were presented, analyzed and interpreted following the objectives of the study. The presentation includes: response rate, background characteristics of participants, descriptive statistics, and interpretation of results for the independent and dependent variables. However, before presentation of the data for each of the objectives, data concerning the demographic characteristics of participants is presented first as below.

4.1 Demographic characteristics of participants

As in shown in Table 1 below, of the 352 participants who took part in the study 214 were male indicated by (61%) while 138 (39%) were female. The results showed that both genders were adequately represented to contribute their views towards study variables. The participants were categorized according to various age groups to find out by age category their opinions concerning the study variables. It was found that majority of participants 121 (35%) were aged 29-38 years followed by the participants who were aged years 39-48 years indicated by 85 (24%), followed by the participants who were 18-28 years 61 (17%) and then followed 59 and above years indicated 48 (14) and the least number of participants were aged 49-58 years indicated by 37 (10).

Participants were also asked to state their education levels as this would help the researcher to know the extent to which the participants understood the study variables and agree or disagree with the underlying assumptions in the questionnaires. It was found that, 142 (40%) of the participants attended secondary followed by 131 (37%) followed by 36 (10%) never went to school followed by 20(6%) attended diploma courses followed by 14 (4%) attended certificate courses and least is 8 (2%) had attained a bachelor's degree or above. Data was also collected

about the number of households each participant had and it was found that most, families had between 6 -10 members 168 (48%) followed by 1-5 members 124 (35%) followed by 11-15 members 53 (15%) and the least was 16 and above members with 7 (2%). All this data concerning the demographic characteristics of participants is presented in table 2 below;

Table 2: Showing the demographic characteristics of participants

Response	Frequency	Percentage
Gender		
Male	214	61
Female	138	39
Age Bracket		
18-28 Years	61	17
29-38 years	121	35
39-48 years	85	24
49-58 years	37	10
59 and above years	48	14
Education Qualifications		
Never went to school	36	10
Primary	131	38
Secondary	142	40
Certificate	14	4
Diploma	20	6
Bachelors	8	2
Number of Households		
1-5 members	124	35
6-10 members	168	48
11-15 members	53	15
16 and above members	7	2

Source: Primary Data 2025

4.2. Effect of prolonged dry spells on food availability among households

Objective one set to identify the effect of prolonged dry spells on food availability among households in Endinzi sub county Isingiro district. Participants 'responses were rated on a Likert scale of 1 – 5 where 1 – Strongly Disagree (SD), 2 – Disagree (D), 3- Not Sure (NS), 4 - Agree (A) and 5 - Strongly Agree (SA). Means and Standard Deviations for each of the constructs of the main study variables were also presented to provide a quantitative summary of the data. A mean score of 3.40-4.19 and above showed an agreement while a mean between 2.60 – 3.39 showed that the participants were not so sure of the variable construct and a mean of 1.80 – 2.29 showed a disagreement of the participants with the said variable constructs. The summary of the findings is presented in table 3 below;

Table 3: Showing the effect of prolonged dry spells on food availability among households

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev.
Food available in Endinzi sub county	6 (2%)	27 (8%)	6 (2%)	168 (48%)	142 (41%)	4.1	0.926
food available in Endinzi sub county all the time	94 (27%)	161 (46%)	36 (10%)	30 (9%)	29 (8%)	2.25	1.183
Dry spells greatly affect food availability	0 (0.3%)	4 (1%)	1 (0.3%)	206 (59%)	139 (40%)	4.37	0.556
High evaporation rates affect food availability	1 (0.3%)	6 (1.7%)	3 (1%)	171 (49%)	169 (48%)	4.43	0.633
Household grows all types of food	30 (9%)	93 (27%)	2 (0.6%)	110 (31%)	115 (33%)	3.53	1.399
Pests & diseases affect the presence of food	3 (1%)	11 (3%)	3 (1%)	210 (60%)	123 (35.1%)	4.25	0.707
Changes in temperature and precipitation affect food availability	7 (2%)	5 (1.4%)	31 (9%)	206 (59%)	101 (29%)	4.11	0.777
Extended dry spells decrease crop yields	0 (0.0%)	5 (1.4%)	2 (0.6%)	165 (47%)	178 (51%)	4.47	0.589

Source: Primary Data 2025

From the findings presented in table 2 above, a significant majority agree (87% combined agree and strongly agree) that food is available, with a mean score of 4.18, though a notable majority (73%) disagrees about continuous availability, with a mean score of 2.25, indicating that food availability is inconsistent. The participants continue to affirm that while food may be present at times, it is not reliably available throughout the year. The data gathered from the Endinzi sub-county reflects significant community concerns regarding food stability, heavily influenced by environmental factors such as drought, evaporation rates, pests, and climate variability. The general sentiment is that, while food can be available on occasion, consistent availability is a challenge, and external factors greatly affect agricultural practices. The findings suggest areas for potential intervention to improve food security, such as enhancing dry spells resilience, pest control, and promoting diverse agricultural practices.

4.3 Correlation between prolonged dry spells and food availability

To study the relationship between prolonged dry spells and food availability in Endinzi subcounty, a Pearson correlation test was used, and the results are presented in Table 4 below.

Table 4: Showing a correlation between Correlations

		Prolonged dry spells	Food Availability
Prolonged dry spells	Pearson Correlation	1	.597**
	Sig. (2-tailed)		.000
	N	352	350
Food Availability	Pearson Correlation	.597**	1
	Sig. (2-tailed)	.000	
	N	352	352

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data 2025

From the table above the correlation coefficient between prolonged dry spells and food availability is 0.597. This value indicates a positive correlation; as the extent of prolonged dry spells increases, food availability tends to decrease. The correlation coefficient of 0.597 suggests a moderate to strong positive relationship between prolonged dry spells and reduced food availability. As prolonged dry spells conditions persist, it is likely that households will experience challenges in accessing adequate food supplies. prolonged dry spells adversely affect food availability. Households struggle to meet their dietary needs, leading to malnutrition and other socio-economic consequences. Therefore, this analysis emphasizes the critical impact of environmental factors, such as prolonged drought, on food security in Endinzi Sub County, Isingiro District.

4.4 Effect of prolonged dry spells on food access among households

Objective two set to identify the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district. Participants 'responses were rated on a Likert scale of 1 – 5 where 1 – Strongly Disagree (SD), 2 – Disagree (D), 3- Not Sure (NS), 4 - Agree (A) and 5 - Strongly Agree (SA). Means and Standard Deviations for each of the constructs of the main study variables were also presented to provide a quantitative summary of the data. A mean score of 3.40-4.19 and above showed an agreement while a mean between 2.60 – 3.39 showed that the participants were not so sure of the variable construct and a mean of 1.80 – 2.29 showed a disagreement of the participants with the said variable constructs. The summary of the findings is presented in table 5 below;

Table 5: Showing the effect of prolonged dry spells on food access

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev.
Extended dry spells affect the access of food in households	1 (0.3%)	—	2 (0.6%)	223 (64%)	122 (35%)	4.34	0.520
High evaporation rates affect the access of food	2 (0.6%)	3 (1%)	10 (3%)	176 (50%)	159 (45%)	4.39	0.645
High prices during dry spells affect the access of food	3 (9%)	4 (1%)	2 (0.6%)	152 (43%)	189 (54%)	4.49	0.659
Changes in crop growing seasons affect the access of food	2 (0.6%)	2 (0.6%)	1 (0.3%)	181 (51%)	164 (47%)	4.44	0.596
People access food from shops during food shortages in extended dry spells	11 (3.1%)	10 (3%)	2 (0.6%)	168 (48%)	159 (45%)	4.30	0.878
people easily access stored food during dry spells	78 (22%)	102 (29%)	24 (7%)	86 (25%)	60 (17%)	2.85	1.449
People easily access processed food during dry spells	2 (0.6%)	21 (6%)	6 (2%)	235 (67%)	86 (25%)	4.09	0.740
Effects of prolonged dry spells affect access to quality food items	2 (0.6%)	2 (0.6%)	—	180 (51%)	166 (47%)	4.44	0.629

Source: Primary Data 2025

From the above finding about the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district, it was found that a significant majority (64% Agree, 35% Strongly Agree) that prolonged dry spells in Endinzi sub county affect food access at the household level. A large portion (50% Agree, 45% Strongly Agree) also acknowledges adverse effects of high evaporation rates of grown crops results poor yields at the end of the harvesting period which generates limited food access among the households. the table explains that when the temperatures go high some crops such banana plantations, casava and maize dries up leading the households to struggle to access food.

4.5 Correlation between prolonged dry spells and food access

To study the relationship between prolonged dry spells and food access in Endinzi subcounty, a Pearson correlation test was used and the results are presented in table 6 below.

Table 6: Showing correlations between prolonged dry spells and food access

		Prolonged dry spells	Food Access
Prolonged dry spells	Pearson Correlation	1	.661**
	Sig. (2-tailed)		.000
	N	352	350
Food Access	Pearson Correlation	.662**	1
	Sig. (2-tailed)	.000	
	N	352	352

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data 2025

From the table above the relationship between prolonged dry spells and food access is 0.661. This indicates a strong positive correlation as prolonged dry spells increases, food access decreases, A strong correlation suggests that prolonged dry spells have significantly impacts food access among households. As dry spells conditions persist, access to food diminishes due to reduced agricultural outputs, increased prices, and possibly a scarcity of available food in Endinzi sub county Isingiro district.

4.6 Effect of prolonged dry spells on food consumption among households

Objective three set to identify the effect of prolonged dry spells on food consumption among households in Endinzi sub county Isingiro district. Participants 'responses were rated on a Likert scale of 1 – 5 where 1 – Strongly Disagree (SD), 2 – Disagree (D), 3- Not Sure (NS), 4 - Agree (A) and 5 - Strongly Agree (SA). Means and Standard Deviations for each of the constructs of the

main study variables were also presented to provide a quantitative summary of the data. A mean score of 3.40-4.19 and above showed an agreement while a mean between 2.60 – 3.39 showed that the participants were not so sure of the variable construct and a mean of 1.80 – 2.29 showed a disagreement of the participants with the said variable constructs. The summary of the findings is presented in table 7 below;

Table 7: Showing the effect of prolonged dry spells on food consumption

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev.
Dry spells affect balanced diet consumption	7 (2%)	3 (1%)	—	177 (51%)	163 (47%)	4.39	0.728
Dry spells affect number of meals taken	—	2 (0.6%)	2 (0.6%)	156 (45%)	190 (54%)	4.53	0.544
Evaporation affects crop growth	—	4 (1%)	10 (3%)	184 (53%)	152 (43%)	4.38	0.603
Dry spells affect enough food consumption	—	4 (1%)	—	198 (57%)	148 (42%)	4.40	0.556
Dry spells affect food surplus	2 (0.6%)	4 (1.1%)	11 (3%)	147 (42%)	186 (53%)	4.46	0.671
Dry spells lead to child malnourishment	137 (39%)	75 (21%)	29 (8%)	47 (13%)	62 (18%)	2.49	1.540
Dry spells affect food stability	12 (3%)	9 (3%)	16 (5%)	219 (63%)	94 (27%)	4.07	0.850
Dry spells affect household food allocation	12 (3.4%)	5 (1.4%)	41 (11%)	132 (38%)	159 (45%)	4.22	0.969

Source: Primary Data 2025

From the table above, findings indicate a strong agreement among participants that dry spells negatively impact their ability to maintain a balanced diet. regarding the impacts of dry spells on diet quality, meal frequency, and crop yield all showed mean scores above 4, indicating strong concern among the participants the table shows that prolonged dry spells significantly affect food security elements among households in Endinzi Sub County, Isingiro District, with strong perceptions of negative impacts on food consumption and stability. Addressing these concerns may

require targeted interventions to improve food access and management strategies in response to climate conditions.

4.7 Correlation between prolonged dry spells and food consumption

To study the relationship between prolonged dry spells and food consumption in Endinzi subcounty, a Pearson correlation test was used and the results are presented in table 8 below;

Table 8: Showing correlation between prolonged dry spells and food consumption

		Prolonged dry spells	Food consumption
Prolonged dry spells	Pearson Correlation	1	.595**
	Sig. (2-tailed)		.000
	N	352	352
Food consumption	Pearson Correlation	.597**	1
	Sig. (2-tailed)	.000	
	N	352	352

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data 2025.

From the table above, Pearson correlation for Consumption Score with Food Security is 0.595. This indicates a moderate to strong positive correlation between food consumption and food security, which meant that when food consumption reduces also food security reduces and vice versa. The positive correlation (0.595) suggests that households with higher food consumption scores generally report better food security and families with low food consumption faces food insecurity during prolonged dry spells times. This relationship is influenced by the ongoing effects of prolonged drought, which may limit food availability and thus impact consumption scores. The negative impacts on food production and availability likely reflect in consumption patterns.

Households may be forced to consume less or lower quality food during dry spells periods, which subsequently decreases food security.

CHAPTER FIVE

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter summarized data collected, analyzed and presented in chapter four of statistics and tables. It gave discussion of the major findings, draws conclusions, and makes recommendations as well as providing areas for further studies.

5.1 Discussion of Findings

This study is further underpinned by the Anthropogenic Global Warming theory, which helps contextualize the findings within the broader narrative of climate change as influenced by human activities. The theory, as posited by Joseph L. Bast, suggests that the increase in carbon emissions resulting in enhanced greenhouse effects leading to irregular weather patterns

Findings showed the challenge of decreased agricultural output due to prolonged dry spells conditions which has affected food security in the whole sub county since dry spells negatively affects crop yields, leading to food scarcity (Zhou et al., 2018). This study's findings are consistent with the study of (Mastrorillo et al., 2016) who posits that Prolonged dry spells tend to exacerbate food insecurity through rising food prices. As local production declines, reliance on markets increases, which often leads to inflated prices as demand exceeds supply.

The study's findings from the participants show that prolonged dry spells conditions have negatively led to reduction in food availability, impacting their overall food security among the households in Endinzi sub county. A high percentage of participants agree that prolonged dry spells is associated with reduced food availability, low level of consumption and this observation aligns with the study of fussel (2009) who posits that dry spells affect both the quantity and quality of

food produced, which can lead to increased vulnerability among households relying on traditional farming. Also, previous studies posit that prolonged dry spells conditions can significantly hinder agricultural productivity, reduce crop yields, and adversely affect livestock, which are essential for food security (Mastrorillo et al., 2016). Similarly, a comprehensive analysis by FAO (2017) indicates that erratic weather patterns can cripple crop production and exacerbate food shortages. Findings also reveal nutritional deficiencies with decreasing food availability, households prioritize quantity over nutritional quality, leading to dietary deficiencies. This challenge is consistent with the (FAO, 2020) which posits that food insecurity often correlates with poor nutrition, which can exacerbate health issues and this challenge has been seen on the ground in Matara village which has children affected by kwashiorkor (Isingiro District Health Report, 2024).

Moreover, participants reported that prolonged dry spells lead to reduced food access among households in Endinzi sub county Isingiro district. Prolonged dry spells result in reduced agricultural production, leading to food shortages. Households' dependent on rain-fed agriculture are particularly vulnerable as dry spells can hinder crop growth, reduce yields, and ultimately limit food availability and accessibility (Mastrorillo et al., 2016). This study finding is consistent with the study of Guan et al. (2018) found that dry spells conditions were directly linked to reduced agricultural output, which in turn diminished food access for households, particularly in rural settings. The (IPCC, 2021) also posits that climate patterns shift, the impacts on food access and availability may become increasingly severe, necessitating adaptive measures in agricultural practices and policies.

Participants reported that prolonged dry spells lead to reduced food consumption patterns among households in Endinzi sub county. the findings reveal that as prolonged dry spells continue to be extended, the food consumption patterns in the households reduce. Prolonged dry spells led to

reduced agricultural productivity and increased food prices, causing households to experience food scarcity. During such times, households often resort to coping strategies, such as reducing meal frequency or the quantity of food consumed, which adversely affects their overall consumption score (Maxwell et al., 2013). This finding aligns with the study of Azzari and Graziano da Silva (2018) who posits that climatic shocks, such as prolonged drought, negatively impact food security and consumption patterns.

Findings also revealed strains in socio-economic structures caused by constant household spending on food items. This challenge echoes the findings of Tschakert et al. (2013) who posits that households facing prolonged dry spells encounter increased social tension and poverty, making it difficult to recover and adapt. Reflecting on the study findings, it is essential to note that previous studies, FAO (2018) posits that dry spells severely affect food production, leading to diminished access to nutritious food options and ultimately contributing to malnutrition among vulnerable populations. the study's' findings reveal that prolonged dry spells has led to reduced food consumption patterns.

5.2 Conclusions

About the effect of prolonged dry spells on food availability, findings revealed that there were food availability inconsistencies among the households in Endinzi subcounty of Isingiro district. It is therefore concluded that food availability was heavily influenced by environmental factors such as prolonged dry spells, evaporation rates, pests, and climate variability.

About the effect of prolonged dry spells on food access among households in Endinzi sub county Isingiro district the study findings revealed that a significant majority of participants acknowledged that prolonged dry spells resulted into poor yields at the end of the harvesting period

which generates limited food access among the households. It is therefore concluded that food accessibility was heavily influenced by quantity of yields at the harvesting period.

About the effect of prolonged dry spells on food consumption among households in Endinzi subcounty, findings revealed that dry spells negatively impacted households' ability to maintain a balanced diet. It is therefore concluded that prolonged dry spells significantly affect food security elements among households in Endinzi Sub County, Isingiro District.

5.3 Recommendations

Based on the study findings and objectives, the following recommendations are proposed to enhance food security in Endinzi sub county Isingiro district.

1. Ministry of agriculture should Promote climate-smart agriculture as a strategy to improve resilience against dry spells. This includes the use of drought-resistant crop varieties, crop rotation, intercropping, and conservation agriculture techniques as well as adopting appropriate technologies that ensure constant food production
2. The government of uganda should promote and enhance skills and knowledge of farmers through training programs focused on sustainable agricultural practices, resource management, and diversification of income sources. Literacy and education positively impact agricultural productivity and food security.
3. Isingiro district local government should encourage households to diversify their income-generating activities beyond agriculture to reduce vulnerability to climate variability. Diversification is crucial for mitigating risks associated with drought.
4. Replica studies be made on the relationship between prolonged dry spells and food security at a wider scope and with mixed methods approach. This would increase the reliability, validity and generalizability of the findings of this study.

5.4 Areas for Further Research

1. Impact of Climate Change on Agricultural Practices in Southwestern Uganda
2. Climate change and food security: A case study of the challenges facing smallholder farmers
3. Differences in Impacts and Adaptation Strategies for Rural Communities in the face of Food Security and Climate Change

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